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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,556

09/24/2007

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EXAMINER

D AGOSTA, STEPHEN M

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/594,556

Applicant(s)GOLITSCHKE EDLER VON
ELBWART ET AL.**Examiner**

Stephen M. D'Agosta

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9-27-2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claims - 35 USC § 101

The method claim (#18) complies with USC 101 requirements in that it recites statutory apparatuses (wireless communication device, wireless system, scheduler) as performing the method steps.

Claim Interpretation(s)

The phrase “minimum resource parameter” is ambiguous and can have many different (broad) meanings/interpretations, eg. is it an actual data rate, a type of service, a QoS parameter such as throughput/jitter/delay, etc.

Without a more concise meaning, the examiner puts forth art that gives its own (specific) meaning as to what that parameter can be.

For example, the resource parameter can be an explicit data rate (eg. 9600bps) or it can be an explicit service (I need a voice channel, I need a data channel, I need both voice/video on a channel, etc).

Appropriate correction is required.

Drawings

It appears that Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-46 rejected under 35 U.S.C. 103(a) as being unpatentable over Holtzman and further in view of Havinga* and {Klein or Hoagland}. **(*from IDS)**

As per **claims 18-19, 33-34**, Holtzman teaches a method for performing a scheduling algorithm in a scheduler of a wireless communication system (Abstract teaches scheduled data transmissions), comprising the steps of:

obtaining from a resource parameter, wherein said minimum resource parameter indicates resources allocated to the communication unit in a scheduling frame to meet a resource constraint scheduling allocation units for radio access to the communication unit in a scheduling frame in accordance with the resource parameter (Holtzman teaches calculating possible data rate(s) for each data user, figure 5 step #514 and then determining the scheduling of the data transmission and power for that transmission, #542-546) **but is silent on** obtaining the parameter from a communication unit (eg. as a request) and a "minimum" resource parameter.

Holtzman teaches the base station determining the data rate for a user but one skilled understands that a user may request a "standard channel" (eg. for an outgoing phone call) whereby said standard channel would be 9600bps and broadly reads on a "resource parameter":

"Prior to scheduling transmission to a new data user, the throughput $T_i(0)$ of the data user is initialized to a particular data rate (e.g., $T_i(0)=9.6$ Kbps), at #512. For each data user desiring data transmission.." C12, L32-40

Havinga teaches energy efficient MAC Protocol scheduling (title) that can support many types of data traffic (pg 1, col 2, 1st full para) whereby the energy consumption is significantly reduced (Col 2, last para). He also discusses power consumption in various modes and during data transmission (pg 2, Cols 2-3 and table on page 7).

Both Klein or Hoagland teach communication unit requests and various minimum resource parameters that can be identified to adapt the unit's ability to transmit/receive:

i. **Klein** teaches controlling wireless access for a plurality of voice/data users whereby a minimum gain threshold is set/used to influence the data rate given to each mobile (Abstract, figure 2 steps 214-218 and 222). Note that the examiner interprets that the channel would be inherently allocated as based on either a request from the user (Eg. to make an outgoing call) or for an incoming call to the user. Similarly, a specific data rate can also be requested by the mobile for a specific type of service (voice, data, voice-and-data, etc).

ii. Lastly, the examiner puts forth **Hoagland** who teaches the mobile device specifically requesting a data rate (increase/decrease) which also reads on a) the communication device requesting step and b) a minimum resource parameter:

A method in a wireless communication system for communicating data from a base station to a mobile unit at a data transfer rate, said method comprising steps of: computing a moving average of said data transfer rate; ascertaining a supportable data rate for receiving data by said mobile unit; transmitting to said base station a maximum data rate request so as to maintain said moving average of said data transfer rate substantially unchanged, said maximum data rate being equal to or lower than said supportable data rate. **(claim 1)**

It would have been obvious to one skilled in the art at the time of the invention to modify Holtzman, such that it obtains the parameter from a communication unit (eg. as a request) and is a "minimum" resource parameter, to provide means for the mobile to request a change whereby said resource parameter can be highly specific, such as a data rate, power level, etc..

With further regard to claims 19 and 33, at least Holtzman and Klein teach concepts that read on "...determination of the power expended for processing of the

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scheduling frame.." (eg. at least Klein teaches using a gain threshold and power level, which reads on the claim. Similarly Holtzman teaches determining the previously used and predicted power requirements to transmit data to the mobiles, see figure 4, which reads on determining if the power is available as based on an "efficiency threshold" since the data rate will be modified if the power requirement/threshold is exceeded, see figure 5 steps 542-546).

As per **claims 20 and 35**, the combo teaches claim 18/19, wherein the minimum resource parameter represents a minimum number of allocation units scheduled for a user or a service in a scheduling frame (the prior art teaches a standard/typical channel, eg. 9600bps and also changes to the power and data rate, see Hoagland/Klein and Havinga).

As per **claims 21 and 36**, the combo teaches claim 18/19, wherein the minimum resource parameter represents a minimum number of information bits per scheduling frame for a user or a service (the prior art teaches a standard/typical channel, eg. 9600bps and also changes to the power and data rate, see Hoagland/Klein and Havinga teaches an energy efficient MAC protocol which takes into account the amount of data per frame).

As per **claims 22 and 37**, the combo teaches claim 18/19, wherein the minimum resource parameter represents a minimum ratio of processed information bits to the expended processing and operating power spent during radio access in the communication unit (Holtzman teaches determining the previously used and predicted power requirements to transmit data to the mobiles, see figure 4, which reads on determining operating power "spent/used" during the transmission and if it is available as based on an "efficiency threshold" since the data rate will be modified if the power requirement/threshold is exceeded, see figure 5 steps 542-546. Havinga shows the amount of power used in various modes, eg. off, sleep, idle, transmit and receive, pg 7).

As per **claims 23 and 38**, the combo teaches claim 18/19, wherein the minimum resource parameter represents a sufficient quantity to exceed a power efficiency threshold in a scheduling frame (at least Klein teaches using a gain threshold and power level, which reads on the claim. Similarly Holtzman teaches determining the previously used and predicted power requirements to transmit data to the mobiles, see figure 4, which reads on determining if the power is available as based on an "efficiency threshold" since the data rate will be modified if the power requirement/threshold is exceeded, see figure 5 steps 542-546).

As per **claims 24-25 and 39-40**, the combo teaches claim 18/19, wherein the minimum resource parameter is signaled periodically from the communication unit to the scheduler OR from a request by the scheduler (at least Hoagland teaches periodic requests from the mobile to change its data rate. Note that Holtzman/Hoagland provide for the BTS to schedule the resource parameter change(s) and Havinga teaches an energy efficient scheduling MAC).

As per **claims 26 and 41**, the combo teaches claim 18/19, **but is silent on** wherein the signaling of the minimum resource parameter is initiated by the communication unit upon fulfillment of power management conditions.

The claim is given a broad/reasonable interpretation such that "fulfillment of power management conditions" means that the mobile is instructed/commanded by the BTS to set its power to a certain level and then commence with data transmission.

a. Power control is well known in the art and can be either closed-loop or open-loop control (eg. mobile feedback or no feedback).

b. Klein clearly teaches the BTS sending power instructions to the mobile so that an optimal power level is set (eg. either before or during voice/data transmission), see at least claims 2-3 and 5.

Havinga teaches various modes the mobile will cycle through and their various power usages (pg. 7)

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It would have been obvious to one skilled in the art at the time of the invention to modify the combo, such that the signaling of the minimum resource parameter is initiated by the communication unit upon fulfillment of power management conditions, to provide means for the mobile to first comply with the BTS's power command before transmitting (so as not to inject interference into the network if the mobile's power is too high).

As per **claims 27 and 42**, the combo teaches claim 18/19, wherein the scheduling step includes considering in addition at least one of the following scheduling parameters channel condition, amount of data available for transmission, quality of service, delay, data rate and carrier to interference ratio (the prior art teaches determining channel conditions, type or amount of data (eg. voice, video), QoS since voice/video have different requirements, interference conditions/SNR, etc.. Also see Havinga who teaches similar parameters, pg 1, col 2).

As per **claims 28 and 43**, the combo teaches claim 18/19, wherein the scheduling frame has at least one of a time division, frequency division or code division frame structure (the prior art teach various cellular protocols, including at least FDMA and CDMA, see Hoagland Column 1. Havinga teaches support for TDMA and CDMA, pg. 3, col 1).

As per **claims 29 and 44**, the combo teaches claim 18/19, wherein the allocation units have a quantity of either one of transmittable information bits, internet protocol packets, code blocks or modulation symbols (the prior art teach at least "data rates" which infer information bits – eg. bits per second – and Hoagland teaches High Rate Data which can be data/packets).

As per **claims 30 and 45**, the combo teaches claim 18/19, wherein the minimum resource parameter is signaled by the communication unit on a separate control channel associated to the data channel over which the allocation units are transmitted (the use of a CONTROL CHANNEL is well known and taught by Holtzman, C5, L32-35, and would be used to provide control to the mobile. Similarly the “control data” could also be embedded in the user data in a user’s dedicated voice/data channel).

As per **claims 31 and 46**, the combo teaches claim 18/19, **but is silent on** wherein the calculation step additionally includes considering the associated overhead signaling appended to the information bits for the scheduling frame.

The user of overhead data (eg. header, CRC, start/end of data or frame, etc) is well known and adds overhead bits to the actual user's data.

The examiner takes **OFFICIAL NOTICE** that one skilled can readily determine that (known) addition of “associated overhead signaling” which is appended to every frame so as to account for it while calculating what data rate/power/etc to allocate to the user (as taught by the prior art).

Also see Havinga who teaches overhead bits being understood (pg. 6 Evaluation section and figure 6).

It would have been obvious to one skilled in the art at the time of the invention to modify the combo, such that wherein the calculation step additionally includes considering the associated overhead signaling appended to the information bits for the scheduling frame, to provide means for calculating based on all the data that is transmitted and not just a subset of user data (eg. overhead data can be significant and it should be taken into account for optimal performance).

As per **claims 32**, the combo teaches claim 19, wherein determination of the power expended includes the power units for each bit processed and/or the power units expended for processing of a scheduling frame (Holtzman teaches calculating the power used previously and predicted power of next frame(s), see figure 4 steps 418-420, which reads on the claim. See Havinga’s table on page 7).

Conclusion

The PTO-892 form also includes pertinent prior art (but not cited).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun Yi Lao can be reached on 571-272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen M. D'Agosta/
Primary Examiner, Art Unit 2617